

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 4-7, 9-12, 14-19, 32, 40, 47, 52, 54, 61, 63, 65-70, 78, 82 and 84-86. Please cancel claims 13, 21, 48, 62, 64, 72, 73, 75, 76, 79-81, 83 and 87-89 as indicated in the following listing of claims.

1. (Currently Amended) A method for selecting a stimulation site in a language-disorder patient, comprising:

administering a neuroexcitatory drug to a patient;

directing ~~a~~the patient to perform a language-based task, including directing the patient to repeat a noun;

directing information to be collected while the patient performs the language-based task with the neuroexcitatory drug active in the patient's body, the information corresponding to a level of neural activity in the patient's brain while the patient performs the language-based task; and

based at least in part on the information, selecting a stimulation site within the patient's skull, proximate the dura mater, and outside a cortical surface of the patient's brain for receiving an electrode coupleable to an electrical current.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The method of claim ~~4~~74 wherein selecting a stimulation site includes selecting a stimulation site at least proximate to at least one of Broca's area, Wernicke's area, and neuronal connections extending between Broca's area and Wernicke's area.

5. (Currently Amended) The method of claim 4-74 wherein selecting a stimulation site includes selecting a stimulation site at least proximate to at least one of the middle temporal gyrus, the retrosplenial cortex and the retrosplenial cuneus of the brain.

6. (Currently Amended) The method of claim 4-74 wherein directing the patient to perform a language-based task includes directing the patient to perform a task that requires no verbal output.

7. (Currently Amended) The method of claim 4-74 wherein directing the patient to perform a language-based task includes directing the patient to silently generate a verb associated with a common noun.

8. (Cancelled)

9. (Currently Amended) The method of claim 4-74 wherein directing the patient to perform a language-based task includes directing the patient to retrieve a word based on a letter cue.

10. (Currently Amended) The method of claim 4-74 wherein directing the patient to perform a language-based task includes directing the patient to retrieve a word based on a visual cue.

11. (Currently Amended) The method of claim 4-74 wherein directing the patient to perform a language-based task includes directing the patient to respond nonverbally to an oral task that requires the patient to understand the difference between two auditory commands.

12. (Currently Amended) The method of claim ~~4~~74, further comprising implanting an electrode at least proximate to the stimulation site.

13. (Cancelled)

14. (Currently Amended) The method of claim ~~4—74~~ wherein directing information to be collected includes directing a computer-based routine to collect the information.

15. (Currently Amended) The method of claim ~~4~~74, further comprising directing the formation of an image of at least a portion of the patient's brain, with at least a portion of the image having features representative of the information.

16. (Currently Amended) The method of claim ~~4—74~~ wherein directing information to be collected includes directing the formation an image of at least a portion of the patient's brain, the image including a first region with a characteristic of the first region having a first value, the image further including a second region with a characteristic of the second region having a second value different than the first value.

17. (Currently Amended) The method of claim ~~4—74~~ wherein directing a patient to perform a language-based task includes directing the patient to perform a first language-based task and wherein directing information to be collected includes directing first information to be collected while the patient performs the first language-based task, and wherein the method further comprises:

directing the patient to perform a second language-based task;

directing second information to be collected while the patient performs the second language-based task; and

determining a location for the stimulation site based on both the first information and the second information.

18. (Currently Amended) The method of claim ~~4~~74 wherein directing a patient to perform a language-based task includes directing the patient to perform a first language-based task subject to a language disorder and wherein directing information to be collected includes directing first information to be collected while the patient performs the first language-based task, and wherein the method further comprises:

- monitoring a first image of the patient's brain function while the patient performs the first language-based task;
- identifying a second language-based task subject to a language disorder;
- monitoring a second image of the patient's brain function while the patient performs the second language-based task; and
- comparing the first and second images to identify at least one stimulation site of the brain.

19. (Currently Amended) ~~A~~The method for treating a language disorder of a patient, of claim 74, further comprising:

- ~~selecting a stimulation site of a patient's brain, the stimulation site being located within the patient's skull, proximate the dura mater, and outside a cortical surface of the patient's brain;~~
- positioning at least one electrode at the stimulation site;
- coupling the at least one electrode to a source of electrical potential; and
- at least reducing a language disorder of the patient by applying electrical stimulation directly to the stimulation site via the at least one electrode while not actively engaging the patient in a language-based task.

20. (Original) The method of claim 19 wherein positioning at least one electrode includes implanting the at least one electrode.

21. (Cancelled)

22. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying an electrical stimulation to the left hemisphere of the brain.

23. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying an electrical stimulation to the right hemisphere of the brain.

24. (Cancelled)

25. (Original) The method of claim 19 wherein at least reducing a language disorder of the patient includes at least reducing an aphasia of the patient.

26. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying an electrical stimulation at least proximate to at least one of Broca's area, Wernicke's area, and neuronal connections extending between Broca's area and Wernicke's area.

27. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying an electrical stimulation to at least one of the middle temporal gyrus, the retrosplenial cortex and the retrosplenial cuneus of the brain.

28-31. (Cancelled)

32. (Currently Amended) The method of claim 19, further comprising:
administering a neuroexcitatory drug-agent to the patient; and
applying the electrical stimulation while the neuroexcitatory drug-agent is active
in the patient's body.

33. (Original) The method of claim 19 wherein applying electrical stimulation includes applying electrical stimulation below a level that causes movement, speech or sensation in the patient.

34. (Original) The method of claim 19 wherein applying electrical stimulation includes applying electrical stimulation at or above a level that causes movement, speech or sensation in the patient.

35. (Original) The method of claim 19 wherein at least reducing a language disorder includes eliminating the language disorder.

36. (Original) The method of claim 19, further comprising locating the stimulation site relative to an anatomical feature of the patient.

37. (Original) The method of claim 19, further comprising locating the stimulation site relative to a fiducial having a fixed location relative to the patient's skull.

38. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying a varying electrical stimulation signal having a frequency of from about 5 Hz to about 200 Hz.

39. (Original) The method of claim 19 wherein applying an electrical stimulation includes applying a varying electrical stimulation signal having an electrical potential of from about 0.25 volts to about 5.0 volts.

40. (Currently Amended) A method for treating a language disorder, comprising:

administering a neuroexcitatory drug to a patient;

directing ~~a~~the patient to perform a language-based task, including directing the patient to retrieve a word based on a letter cue;
directing information to be collected while the patient performs the language-based task with the neuroexcitatory drug active in the patient's body, the information corresponding to a level of neural activity in the patient's brain while the patient performs the language-based task; and
at least reducing a language disorder of the patient by applying an electrical stimulation at least proximate to ~~a~~one or more stimulation sites, ~~the~~with locations of all the stimulation sites for receiving electrical stimulation at the patient's brain being based at least in part on the information, and being proximate the dura mater and outside a cortical surface of the patient's brain.

41. (Original) The method of claim 40 wherein directing the patient to perform a language-based task includes directing the patient to perform a task that requires no verbal output.

42. (Original) The method of claim 40 wherein directing the patient to perform a language-based task includes directing the patient to silently generate a verb associated with a common noun.

43. (Original) The method of claim 40 wherein directing the patient to perform a language-based task includes directing the patient to repeat a noun.

44. (Cancelled)

45. (Original) The method of claim 40 wherein directing the patient to perform a language-based task includes directing the patient to retrieve a word based on a visual cue.

46. (Original) The method of claim 40 wherein directing the patient to perform a language-based task includes directing the patient to respond nonverbally to an oral task that requires the patient to understand the difference between two auditory commands.

47. (Currently Amended) The method of claim 40, further comprising:
administering a neuroexcitatory ~~drug-agent~~ to the patient; and
applying the electrical stimulation while the neuroexcitatory ~~drug-agent~~ is active
in the patient's body.

48. (Cancelled)

49. (Original) The method of claim 40 wherein directing information to be collected includes directing a computer-based routine to collect the information.

50. (Original) The method of claim 40, further comprising directing the formation of an image of at least a portion of the patient's brain, with at least a portion of the image having features representative of the information.

51. (Original) The method of claim 40 wherein directing information to be collected includes directing the formation an image of at least a portion of the patient's brain, the image including a first region with a characteristic of the first region having a first value, the image further including a second region with a characteristic of the second region having a second value different than the first value.

52. (Currently Amended) The method of claim ~~40-74~~ wherein directing information to be collected includes directing information to be collected corresponding to blood oxygen levels in the brain.

53. (Original) The method of claim 40, further comprising implanting at least one electrode at least proximate to the stimulation site, and wherein applying an electrical stimulation includes applying an electrical signal to the at least one electrode.

54. (Currently Amended) The method of claim ~~40~~74, further comprising placing an electrode at least proximate to the stimulation site.

55. (Original) The method of claim 40 wherein directing a patient to perform a language-based task includes directing the patient to perform a first language-based task and wherein directing information to be collected includes directing first information to be collected while the patient performs the first language-based task, and wherein the method further comprises:

directing the patient to perform a second language-based task;
directing second information to be collected while the patient performs the second language-based task; and
determining a location for the stimulation site based on both the first information and the second information.

56-60. (Cancelled)

61. (Currently Amended) A ~~The~~ method for ~~treating a brain disorder,~~
~~comprising of claim 82 wherein:~~

directing a patient to perform a language-based task; ~~includes~~ing directing the patient to respond nonverbally to an oral task that requires the patient to understand the difference between two auditory commands;
~~directing information to be collected, the information corresponding to a level of neural activity in the patient's brain while the patient performs the task;~~
and

~~applying an electrical stimulation at least proximate to a stimulation site of the patient's brain while directing the information to be collected, the stimulation site being proximate the dura mater and outside a cortical surface of the patient's brain.~~

62. (Cancelled)

63. (Currently Amended) The method of claim ~~61~~74 wherein directing information to be collected includes directing the collection of functional magnetic resonance image data.

64. (Cancelled)

65. (Currently Amended) The method of example ~~64~~74, further comprising implanting an electrode at least proximate to the stimulation site, ~~wherein applying an electrical stimulation includes~~ and applying an electrical stimulation via the electrode.

66. (Currently Amended) The method of claim ~~64~~82 wherein directing the patient to perform a task includes directing the patient to perform a language-based task that requires no verbal output.

67. (Currently Amended) The method of claim ~~64~~82 wherein directing the patient to perform a task includes directing the patient to silently generate a verb associated with a common noun.

68. (Currently Amended) The method of claim ~~64~~82 wherein directing the patient to perform a task includes directing the patient to repeat a noun.

69. (Currently Amended) The method of claim ~~64~~82 wherein directing the patient to perform a task includes directing the patient to retrieve a word based on a letter cue.

70. (Currently Amended) The method of claim ~~64~~82 wherein directing the patient to perform a task includes directing the patient to retrieve a word based on a visual cue.

71-73. (Cancelled)

74. (Previously Presented) A method for selecting a stimulation site in a language-disorder patient, comprising:

administering a neuroexcitatory drug to a patient;

directing the patient to perform a language-based task;

directing information to be collected, the information corresponding to a level of neural activity in the patient's brain while the patient performs the language-based task with the neuroexcitatory drug active in the patient's body; and

based at least in part on the information, selecting a stimulation site within the patient's skull for receiving an electrode coupleable to an electrical current.

75-77. (Cancelled)

78. (Currently Amended) ~~A~~The method for treating a language disorder of a patient, comprising: of claim 82, further comprising

~~selecting a stimulation site of a patient's brain, the stimulation site being located within the patient's skull, proximate the dura mater, and outside a cortical surface of the patient's brain;~~

~~positioning at least one electrode at the stimulation site;~~

~~coupling the at least one electrode to a source of electrical potential;~~

~~at least reducing a language disorder of the patient by applying electrical stimulation directly to the stimulation site via the at least one electrode; and~~

not engaging the patient in a speech therapy task while applying the electrical stimulation.

79-81. (Cancelled)

82. (Currently Amended) A method for treating a language disorder, comprising:

administering a neuroexcitatory drug to ~~the~~ a patient;

directing ~~a~~ the patient to perform a language-based task;

directing information to be collected while the patient performs the language-based task with the neuroexcitatory drug active in the patient's body, the information corresponding to a level of neural activity in the patient's brain while the patient performs the language-based task; and

at least reducing a language disorder of the patient by applying an electrical stimulation at least proximate to a stimulation site, the location of the stimulation site being based at least in part on the information.

83. (Cancelled)

84. (Currently Amended) ~~A~~ The ~~method for treating a brain disorder, comprising:~~ of claim 74, further comprising

~~directing a patient to perform a task, including directing the patient to repeat a~~
~~neuron;~~

~~directing information to be collected, the information corresponding to a level of~~
~~neural activity in the patient's brain while the patient performs the task; and~~

~~applying an electrical stimulation at least proximate to a stimulation site of to the~~
~~patient's brain while directing the information to be collected, the stimulation site being~~
~~proximate the dura mater and outside a cortical surface of the patient's brain.~~

85. (Currently Amended) A ~~The~~ method for treating a brain disorder,
~~comprising of claim 74 wherein :~~

~~directing a the patient to perform a task, including directing the patient to~~
~~retrieve a word based on a letter cue, and wherein the method further comprises :~~

~~directing information to be collected, the information corresponding to a level of~~
~~neural activity in the patient's brain while the patient performs the task; and~~

~~applying an electrical stimulation at least proximate to a stimulation site of to the~~
~~patient's brain while directing the information to be collected, the stimulation site being~~
~~proximate the dura mater and outside a cortical surface of the patient's brain.~~

86. (Currently Amended) A ~~The~~ method for treating a language disorder of a
~~patient, comprising of claim 74, further comprising~~

~~selecting a stimulation site of a patient's brain, the stimulation site being located~~
~~within the patient's skull, proximate the dura mater, and outside a cortical surface of the~~
~~patient's brain;~~

locating the stimulation site relative to a fiducial having a fixed location relative to the patient's skull;

~~positioning at least one electrode at the stimulation site;~~

~~coupling the at least one electrode to a source of electrical potential; and~~

~~at least reducing a language disorder of the patient by applying electrical stimulation directly to the stimulation site via the at least one electrode.~~

87-89. (Cancelled)